FIG. 1

Initialize β, const, $\bar{n}$

for all simulation time steps

determine time step
increment n by 1

Determine the covariance matrix $\underline{C}$

Calculate the inverse of the covariance matrix $\underline{C}$

Calculate the variable σ

for each desired vector $\underline{y}$ of
1/f-distributed random numbers

Supplement vector $\underline{x}$ of the
(0,1) normally distributed random
numbers by a new random number

Calculate the variable μ

Transform the new random number with
the variables μ and σ, and thus
supplement the vector $\underline{y}$ of the
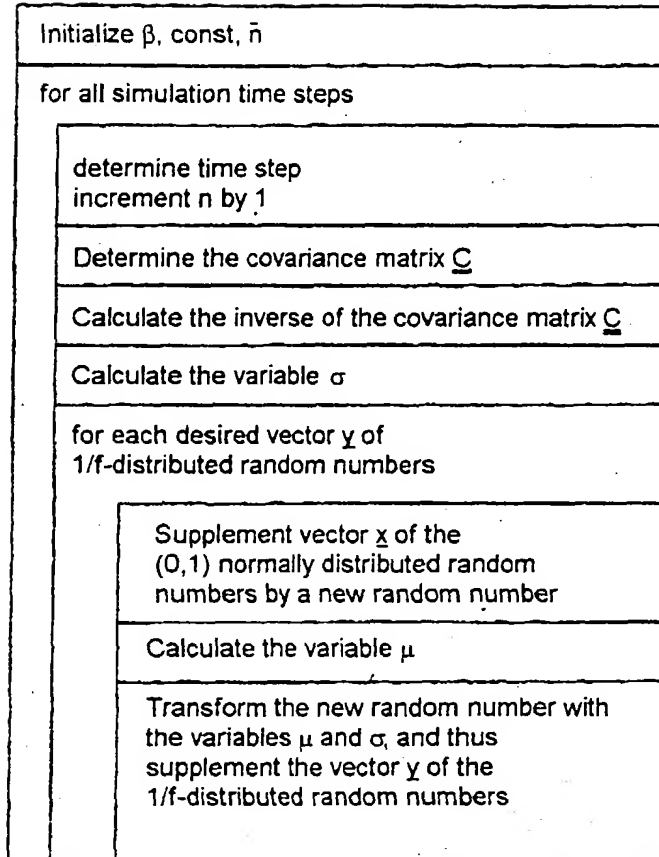1/f-distributed random numbers

FIG. 2

$$\underline{C} = [0.70]$$

FIG. 3A

$$\underline{C}^{-1} = [1.41]$$

FIG. 3B

$$\sigma = 0.84$$

FIG. 3C

x-Vector No. 1: [-0.35]
x-Vector No. 2: [1.73]
x-Vector No. 3: [0.79]

FIG. 3D

μ for x-Vector No. 1:   0.00
μ for x-Vector No. 2:   0.00
μ for x-Vector No. 3:   0.00

FIG. 3E

y-Vector No. 1: [-0.30]
y-Vector No. 2: [1.45]
y-Vector No. 3: [0.66]

FIG. 3F

$$\underline{\underline{\Sigma}} = \begin{bmatrix} 0.70 & 0.17 \\ 0.17 & 0.25 \end{bmatrix}$$

FIG. 4A

$$\underline{\underline{\Sigma}}^{1} = \begin{bmatrix} 1.69 & -1.15 \\ -1.15 & 4.79 \end{bmatrix}$$

FIG. 4B

$$\sigma = 0.45$$

FIG. 4C

```
x-Vector No. 1: [-0.35,   0.39]
x-Vector No. 2: [ 1.73,   2.24]
x-Vector No. 3: [ 0.79,  -0.46]
```

FIG. 4D

```
μ for x-Vector No. 1:  -0.07
μ for x-Vector No. 2:   0.35
μ for x-Vector No. 3:   0.16
```

FIG. 4E

```
y-Vector No. 1: [-0.30,   0.10]
y-Vector No. 2: [ 1.45,   1.37]
y-Vector No. 3: [ 0.66,  -0.05]
```

FIG. 4F

$$\underline{\underline{\Sigma}} = \begin{bmatrix} 0.70 & 0.17 & 0.22 \\ 0.17 & 0.25 & 0.17 \\ 0.22 & 0.17 & 0.70 \end{bmatrix}$$

FIG. 5A

$$\underline{\underline{\Sigma}}^{-1} = \begin{bmatrix} 1.75 & -0.98 & -0.31 \\ -0.98 & 5.34 & -0.98 \\ -0.31 & -0.98 & 1.75 \end{bmatrix}$$

FIG. 5B

$$\sigma = 0.75$$

FIG. 5C

```
x-Vector No. 1:  [-0.35,   0.39,  -0.90]
x-Vector No. 2:  [ 1.73,   2.24,  -0.26]
x-Vector No. 3:  [ 0.79,  -0.46,   0.53]
```

FIG. 5D

```
μ for x-Vector No. 1:   0.00
μ for x-Vector No. 2:   1.03
μ for x-Vector No. 3:   0.09
```

FIG. 5E

```
y-Vector No. 1:  [-0.30,   0.10,  -0.67]
y-Vector No. 2:  [ 1.45,   1.37,   0.83]
y-Vector No. 3:  [ 0.66,  -0.05,   0.49]
```

FIG. 5F